

WHAT IS CLAIMED AS NEW AND DESIRED TO BE PROTECTED BY
LETTERS PATENT OF THE UNITED STATES OF AMERICA, IS:

1. A collated array of permanent raised pavement markers (RPMs), comprising:

5 a plurality of permanent raised pavement markers (RPMs) arranged within a collated array wherein each one of said plurality of permanent raised pavement markers (RPMs) has an upper surface portion and a bottom surface portion;

10 adhesive means, fixedly mounted upon said bottom surface portion of each one of said plurality of permanent raised pavement markers (RPMs), for permitting each one of said bottom surface portions of said plurality of permanent raised pavement markers (RPMs) to be fixedly adhered to a pavement surface as a result of said plurality of permanent raised pavement markers (RPMs) being serially dispensed and 15 said bottom surface portions of said plurality of permanent raised pavement markers (RPMs) being applied directly to the pavement surface at predeterminedly spaced positions located along the pavement surface; and

20 a single release sheet to which all of said adhesive means of said plurality of permanent raised pavement markers (RPMs) are adhered prior to the serial dispensing and application of said plurality of permanent raised pavement markers (RPMs) onto the pavement surface.

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2. The collated array of permanent raised pavement markers (RPMs) as set forth in Claim 1, wherein:

said plurality of permanent raised pavement markers (RPMs) comprise permanent half-track raised pavement markers (RPMs).

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3. The collated array of permanent raised pavement markers (RPMs) as set forth in Claim 2, wherein:

10 said plurality of permanent raised pavement markers (RPMs) comprise permanent full-track raised pavement markers (RPMs).

15 4. The collated array of permanent raised pavement markers (RPMs) as set forth in Claim 3, wherein:

 each one of said plurality of permanent full-track raised pavement markers (RPMs) has a substantially square configured base section, a horizontally disposed upper surface, and a pair of inclined side walls such that said plurality of permanent full-track raised pavement markers (RPMs) have substantially trapezoidal configured cross-sectional configurations.

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5. The collated array of permanent raised pavement markers (RPMs) as set forth in Claim 4, wherein:

30 at least one light reflective element is fixedly mounted upon at least one of said pair of inclined side walls of said plurality of permanent full-track raised pave-

ment markers (RPMs).

5 6. The collated array of permanent raised pavement markers (RPMs) as set forth in Claim 3, wherein:

each one of said plurality of permanent full-track raised pavement markers (RPMs) has a substantially elliptical configured base section, a horizontally disposed upper surface, and a pair of inclined side walls such that said plurality of permanent full-track raised pavement markers (RPMs) have substantially trapezoidal configured cross-sectional configurations.

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7. The collated array of permanent raised pavement markers (RPMs) as set forth in Claim 6, wherein:

at least one light reflective element is fixedly mounted upon at least one of said pair of inclined side walls of said plurality of permanent full-track raised pavement markers (RPMs).

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8. The collated array of permanent raised pavement markers (RPMs) as set forth in Claim 3, wherein:

each one of said plurality of permanent full-track raised pavement markers (RPMs) has a substantially circular configured base section and a domed body section.

9. The collated array of permanent raised pavement markers (RPMs) as set forth in Claim 8, wherein:

 said domed body section of each one of said permanent full-track raised pavement markers (RPMs) has at least one recessed region within which at least one light reflective element is fixedly mounted.

10 10. The collated array of permanent raised pavement markers as set forth in Claim 8, wherein:

 said domed body section is brightly colored so as to be light-reflective.

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11. The collated array of permanent raised pavement markers (RPMs) as set forth in Claim 1, wherein:

 said plurality of permanent raised pavement markers (RPMs) are disposed atop one another when said plurality of permanent raised pavement markers (RPMs) are disposed within said nested array; and

 portions of said single release sheet, to which all of said adhesive means of said plurality of permanent raised pavement markers (RPMs) are adhered prior to the serial dispensing and application of said plurality of permanent raised pavement markers (RPMs) onto the pavement surface, are interposed between successive ones of said plurality of nested permanent raised pavement markers (RPMs).

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12. The collated array of permanent raised pavement markers (RPMs) as set forth in Claim 11, wherein:

each one of said portions of said single release sheet, interposed between said successive ones of said plurality of nested permanent raised pavement markers (RPMs), defines a folded loop, set inwardly with respect to an edge portion of each one of said adhesive means, such that when each one of said folded loops is unfolded in connection with the serial dispensing and application of said permanent raised pavement markers (RPMs) onto the pavement surface, a feather-edge bond structure, defined at a boundary region between each folded loop portion of said release sheet and each one of said adhesive means, is able to be effectively recombined with a respective one of said adhesive means so as to effectively permit said feather-edge bond structure to be completely assimilated within said adhesive means and thereby readily permit the easy separation, peeling, and stripping of said release sheet from each one of said adhesive means.

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13. The collated array of permanent raised pavement markers (RPMs) as set forth in Claim 5, wherein:

each one of said plurality of permanent raised pavement markers (RPMs) has a predetermined lateral width dimension; and

said single release sheet has a predetermined lateral width dimension which is greater than said predetermined lateral width dimension of each one of said plurality of permanent raised pavement markers (RPMs) such that side edge

portions of said single release sheet extend beyond side edge portions of each one of said plurality of permanent raised pavement markers (RPMs).

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14. A method of forming a collated array of permanent raised pavement markers (RPMs), comprising the steps of:

10 arranging a plurality of permanent raised pavement markers (RPMs) within a collated array wherein each one of said plurality of permanent raised pavement markers has an upper surface portion and a bottom surface portion;

15 fixedly mounting adhesive means upon said bottom surface portion of each one of said plurality of permanent raised pavement markers (RPMs) for permitting each one of said plurality of permanent raised pavement markers (RPMs) to be fixedly adhered to a pavement surface when said plurality of permanent raised pavement markers (RPMs) are serially dispensed and said bottom surface portions of said 20 plurality of permanent raised pavement markers (RPMs) are applied directly to the pavement surface at predeterminedly spaced positions located along the pavement surface; and

25 adhering all of said adhesive means of said plurality of permanent raised pavement markers (RPMs) to a single release sheet prior to the serial dispensing and application of said plurality of permanent raised pavement markers (RPMs) onto the pavement surface.

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15. The method of forming a collated array of permanent

raised pavement markers (RPMs) as set forth in Claim 14, further comprising the steps of:

disposing said plurality of permanent raised pavement markers (RPMs) within a nested array with respect to each other prior to the serial dispensing and application of said plurality of permanent raised pavement markers (RPMs) onto the pavement surface.

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16. The method of forming a collated array of permanent raised pavement markers (RPMs) as set forth in Claim 15, further comprising the steps of:

disposing said plurality of permanent raised pavement markers (RPMs) atop one another when said plurality of permanent raised pavement markers (RPMs) are disposed within said nested array; and

interposing portions of said single release sheet, to which all of said adhesive means of said plurality of permanent raised pavement markers (RPMs) are adhered prior to the serial dispensing and application of said plurality of permanent raised pavement markers (RPMs) onto the pavement surface, between successive ones of said plurality of nested permanent raised pavement markers (RPMs).

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17. The method of forming a collated array of permanent raised pavement markers (RPMs) as set forth in Claim 16, further comprising the step of:

forming each one of said portions of said single

release sheet, interposed between said successive ones of said plurality of nested permanent raised pavement markers (RPMs), into a folded loop, set inwardly with respect to an edge portion of each one of said adhesive means, such that

5 when each one of said folded loops is unfolded in connection with the serial dispensing and application of said permanent raised pavement markers (RPMs) onto the pavement surface, a feather-edge bond structure, defined at a boundary region between each folded loop portion of said release sheet and

10 each one of said adhesive means, is able to be effectively recombined with a respective one of said adhesive means so as to effectively permit said feather-edge bond structure to be completely assimilated within said adhesive means and thereby readily permit the easy separation, peeling, and

15 stripping of said release sheet from each one of said adhesive means.

20 18. The method of forming a collated array of permanent raised pavement markers (RPMs) as set forth in Claim 16, further comprising the steps of:

25 providing each one of said plurality of permanent raised pavement markers (RPMs) with a predetermined lateral width dimension; and

providing said single release sheet with a predetermined lateral width dimension which is greater than said predetermined lateral width dimension of each one of said plurality of permanent raised pavement markers (RPMs) such that side edge portions of said single release sheet extend beyond side edge portions of each one of said plurality of

permanent raised pavement markers (RPMs).

5 19. Apparatus for serially dispensing and applying a collated array of permanent raised pavement markers (RPMs) onto a pavement surface, comprising:

10 a plurality of permanent raised pavement markers (RPMs) arranged within a collated array wherein each one of said plurality of permanent raised pavement markers (RPMs) has an upper surface portion and a bottom surface portion;

15 adhesive means, fixedly mounted upon said bottom surface portion of each one of said plurality of permanent raised pavement markers (RPMs), for permitting each one of said bottom surface portions of said plurality of permanent raised pavement markers (RPMs) to be fixedly adhered to a pavement surface as a result of said plurality of permanent raised pavement markers (RPMs) being serially dispensed and said bottom surface portions of said plurality of permanent 20 raised pavement markers (RPMs) being applied directly to the pavement surface at predeterminedly spaced positions located along the pavement surface;

25 a single release sheet to which all of said adhesive means of said plurality of permanent raised pavement markers (RPMs) are adhered prior to the serial dispensing and application of said plurality of permanent raised pavement markers (RPMs) onto the pavement surface; and

30 means for causing a leading one of said plurality of permanent raised pavement markers (RPMs), disposed within said collated array of permanent raised pavement markers (RPMs), to be separated from said plurality of permanent

raised pavement markers (RPMs) disposed within said collated array of permanent raised pavement markers (RPMs) and for depositing said bottom surface portion of said leading one of said plurality of permanent raised pavement markers (RPMs), upon which said adhesive means is disposed, directly onto the pavement surface so as to facilitate the adhesive bonding of said leading one of said plurality of permanent raised pavement markers (RPMs) to the pavement surface.

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20. The apparatus for serially dispensing and applying a collated array of permanent raised pavement markers (RPMs) onto a pavement surface as set forth in Claim 19, wherein:

15 said plurality of permanent raised pavement markers (RPMs) are disposed within a nested array with respect to each other prior to the serial dispensing and application of said plurality of permanent raised pavement markers (RPMs) onto the pavement surface.

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21. The apparatus for serially dispensing and applying a collated array of permanent raised pavement markers (RPMs) onto a pavement surface as set forth in Claim 20, wherein:

 said plurality of permanent raised pavement markers (RPMs) are disposed atop one another when said plurality of permanent raised pavement markers (RPMs) are disposed within said nested array; and

30 portions of said single release sheet, to which all of said adhesive means of said plurality of permanent

raised pavement markers (RPMs) are adhered prior to the serial dispensing and application of said plurality of permanent raised pavement markers (RPMs) onto the pavement surface, are interposed between successive ones of said plurality of nested permanent raised pavement markers (RPMs).

22. The apparatus for serially dispensing and applying a
10 collated array of permanent raised pavement markers (RPMs)
onto a pavement surface as set forth in Claim 21, wherein:

each one of said portions of said single release sheet, interposed between said successive ones of said plurality of nested permanent raised pavement markers (RPMs),
15 defines a folded loop, set inwardly with respect to an edge portion of each one of said adhesive means, such that when each one of said folded loops is unfolded in connection with the serial dispensing and application of said plurality of permanent raised pavement markers (RPMs) onto the pavement
20 surface, a feather-edge bond structure, defined at a boundary region between each folded loop portion of said release sheet and each one of said adhesive means, is able to be effectively recombined with a respective one of said adhesive means so as to effectively permit said feather-edge bond
25 structure to be completely assimilated within said adhesive means and thereby readily permit the easy separation, peeling, and stripping of said release sheet from each one of said adhesive means.

23. The apparatus for serially dispensing and applying a collated array of permanent raised pavement markers (RPMs) onto a pavement surface as set forth in Claim 21, wherein:

5 each one of said plurality of permanent raised pavement markers (RPMs) has a predetermined lateral width dimension; and

10 said single release sheet has a predetermined lateral width dimension which is greater than said predetermined lateral width dimension of each one of said plurality of permanent raised pavement markers (RPMs) such that side edge portions of said single release sheet extend beyond side edge portions of each one of said plurality of permanent raised pavement markers (RPMs).

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24. The apparatus for serially dispensing and applying a collated array of permanent raised pavement markers (RPMs) onto a pavement surface as set forth in Claim 19, wherein:

20 said means for causing said leading one of said plurality of permanent raised pavement markers (RPMs), disposed within said collated array of permanent raised pavement markers (RPMs), to be separated from said plurality of permanent raised pavement markers (RPMs) disposed within

25 said collated array of pavement markers so as to be capable of being applied to the pavement surface comprises a stripper plate around which said single release sheet is routed so as to strip said single release sheet from said leading one of said plurality of permanent raised pavement markers (RPMs) in order to expose said adhesive means disposed upon

30 said bottom surface portions of said leading one of said

plurality of permanent raised pavement markers (RPMs) such that said leading one of said plurality of pavement markers can be fixedly applied to the pavement surface.

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25. The apparatus for serially dispensing and applying a collated array of permanent raised pavement markers (RPMs) onto a pavement surface as set forth in Claim 24, further comprising:

an indexable roller, around which said single release sheet is routed, for indexably moving said single release sheet predetermined distances so as to serially dispense individual ones of said permanent raised pavement markers (RPMs) at predetermined times such that said permanent raised pavement markers (RPMs) will be fixedly applied onto the pavement surface at positions which are spaced predetermined distances apart.

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26. The apparatus for serially dispensing and applying a collated array of permanent raised pavement markers (RPMs) onto a pavement surface as set forth in Claim 25, further comprising:

a drive motor operatively connected to said indexable roller; and

a program logic controller (PLC) operatively connected to said drive motor so as to energize said drive motor at predetermined times so as to cause said drive motor to operate said indexable roller at predetermined times in ord-

er to indexably advance said single release sheet with respect to said stripper plate.

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27. The apparatus as set forth in Claim 24, further comprising:

an applicator wheel for rollably engaging said leading one of said plurality of permanent raised pavement markers (RPMs), from which said single release sheet has been stripped, so as to fixedly apply said leading one of said plurality of permanent raised pavement markers (RPMs) to the pavement surface.

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28. A method for serially dispensing and applying a collated array of permanent raised pavement markers (RPMs) onto a pavement surface, comprising the steps of:

20 providing a plurality of permanent raised pavement markers (RPMs) within a collated array wherein each one of said plurality of permanent raised pavement markers (RPMs) has an upper surface portion and a bottom surface portion;

25 fixedly mounting adhesive means, upon said bottom surface portion of each one of said plurality of permanent raised pavement markers (RPMs), for permitting each one of said bottom surface portions of said plurality of permanent raised pavement markers (RPMs) to be fixedly adhered to a pavement surface as a result of said plurality of permanent raised pavement markers (RPMs) being serially dispensed and said bottom surface portions of said plurality of permanent

raised pavement markers (RPMs) being applied directly to the pavement surface at predeterminedly spaced positions located along the pavement surface;

5 adhering a single release sheet to all of said adhesive means of said plurality of permanent raised pavement markers (RPMs) prior to the serial dispensing and application of said plurality of permanent raised pavement markers (RPMs) onto the pavement surface; and

10 separating a leading one of said plurality of permanent raised pavement markers (RPMs), disposed within said collated array of permanent raised pavement markers (RPMs), from said plurality of permanent raised pavement markers (RPMs) disposed within said collated array of permanent raised pavement markers (RPMs), and depositing said 15 bottom surface portion of said leading one of said plurality of permanent raised pavement markers (RPMs), upon which said adhesive means is disposed, directly onto the pavement surface so as to facilitate the adhesive bonding of said leading one of said plurality of permanent raised pavement markers (RPMs) to the pavement surface.

25 29. The method for serially dispensing and applying a collated array of permanent raised pavement markers (RPMs) onto a pavement surface as set forth in Claim 28, further comprising the steps of:

30 disposing said plurality of permanent raised pavement markers (RPMs) within a nested array with respect to each other prior to the serial dispensing and application of said plurality of permanent raised pavement markers (RPMs)

onto the pavement surface.

5 30. The method for serially dispensing and applying a col-
10 lated array of permanent raised pavement markers (RPMs) onto
a pavement surface as set forth in Claim 29, further com-
prising the steps of:

10 disposing said plurality of permanent raised pave-
ment markers (RPMs) atop one another when said plurality of
permanent raised pavement markers (RPMs) are disposed within
said nested array; and

15 interposing portions of said single release sheet,
to which all of said adhesive means of said plurality of
permanent raised pavement markers (RPMs) are adhered prior
to the serial dispensing and application of said plurality
of permanent raised pavement markers (RPMs) onto the pave-
ment surface, between successive ones of said plurality of
nested permanent raised pavement markers (RPMs).

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25 31. The method for serially dispensing and applying a col-
lated array of permanent raised pavement markers (RPMs) onto
a pavement surface as set forth in Claim 30, further com-
prising the step of:

30 forming each one of said portions of said single
release sheet, interposed between said successive ones of
said plurality of nested permanent raised pavement markers
(RPMs), into a folded loop, set inwardly with respect to an
edge portion of each one of said adhesive means, such that

when each one of said folded loops is unfolded in connection with the serial dispensing and application of said permanent raised pavement markers (RPMs) onto the pavement surface, a feather-edge bond structure, defined at a boundary region
5 between each folded loop portion of said release sheet and each one of said adhesive means, is able to be effectively recombined with a respective one of said adhesive means so as to effectively permit said feather-edge bond structure to be completely assimilated within said adhesive means and
10 thereby readily permit the easy separation, peeling, and stripping of said release sheet from each one of said adhesive material.

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32. The method for serially dispensing and applying a collated array of permanent raised pavement markers (RPMs) onto a pavement surface as set forth in Claim 30, further comprising the steps of:

20 providing each one of said plurality of permanent raised pavement markers (RPMs) with a predetermined lateral width dimension; and

25 providing said single release sheet with a predetermined lateral width dimension which is greater than said predetermined lateral width dimension of each one of said plurality of permanent raised pavement markers (RPMs) such that side edge portions of said single release sheet extend beyond side edge portions of each one of said plurality of permanent raised pavement markers (RPMs).

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33. The method for serially dispensing and applying a collated array of permanent raised pavement markers (RPMs) onto a pavement surface as set forth in Claim 28, further comprising the step of:

5 using a stripper plate to cause said leading one of said plurality of permanent raised pavement markers (RPMs), disposed within said collated array of permanent raised pavement markers (RPMs), to be separated from said plurality of permanent raised pavement markers (RPMs), disposed within said collated array of permanent raised pavement markers (RPMs) so as to be capable of being applied to the pavement surface, as a result of said single release sheet being routed around said stripper plate so as to strip said single release sheet from said leading one of said plurality of permanent raised pavement markers (RPMs) in order to expose said adhesive means disposed upon said bottom surface portion of said leading one of said plurality of permanent raised pavement markers (RPMs) such that said leading one of said plurality of permanent raised pavement markers (RPMs) can be fixedly applied to the pavement surface.

25 34. The method for serially dispensing and applying a collated array of permanent raised pavement markers (RPMs) onto a pavement surface as set forth in Claim 33, further comprising the step of:

30 indexably moving an indexable roller, around which said single release sheet is routed, for indexably moving said single release sheet predetermined distances so as to

serially dispense individual ones of said permanent raised pavement markers (RPMs) at predetermined times such that said permanent raised pavement markers (RPMs) will be fixedly applied onto the pavement surface at positions which are 5 spaced predetermined distances apart.

35. The method for serially dispensing and applying a col-
10 lated array of permanent raised pavement markers (RPMs) onto a pavement surface as set forth in Claim 34, further comprising the steps of:

operatively connecting a drive motor to said indexable roller; and

15 operatively connecting a program logic controller (PLC) to said drive motor so as to energize said drive motor at predetermined times so as to cause said drive motor to operate said indexable roller at predetermined times in order to indexably advance said single release sheet with respect to said stripper plate.

36. The method for serially dispensing and applying a col-
25 lated array of permanent raised pavement markers (RPMs) onto a pavement surface as set forth in Claim 35, further comprising the step of:

30 using an applicator wheel to rollably engage said leading one of said plurality of permanent raised pavement markers (RPMs), from which said single release sheet has been stripped, so as to fixedly apply said leading one of

said plurality of permanent raised pavement markers (RPMs)
 to the pavement surface.

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